

Title (en)

PIEZOELECTRIC CERAMICS, PIEZOELECTRIC ELEMENT, AND ELECTRONIC APPARATUS

Title (de)

PIEZOELEKTRISCHE KERAMIK, PIEZOELEKTRISCHES ELEMENT UND ELEKTRONISCHE VORRICHTUNG

Title (fr)

CÉRAMIQUE PIÉZOÉLECTRIQUE, ÉLÉMENT PIÉZOÉLECTRIQUE ET APPAREIL ÉLECTRONIQUE

Publication

EP 3584848 A1 20191225 (EN)

Application

EP 19178038 A 20190604

Priority

JP 2018110570 A 20180608

Abstract (en)

Provided is a piezoelectric ceramics including crystal grains each including: a first region that is formed of a perovskite-type metal oxide having a crystal structure in which a central element of a unit cell is located at an asymmetrical position; and a second region that is formed of a perovskite-type metal oxide having a crystal structure in which a central element of a unit cell is located at a symmetrical position, and that is present inside the first region, wherein a ratio of a cross-sectional area of the second region to a cross-sectional area of the piezoelectric ceramics is 0.1% or less.

IPC 8 full level

H01L 41/187 (2006.01); **C04B 35/468** (2006.01)

CPC (source: CN EP US)

C04B 35/26 (2013.01 - EP); **C04B 35/462** (2013.01 - EP); **C04B 35/465** (2013.01 - EP); **C04B 35/4682** (2013.01 - EP); **C04B 35/475** (2013.01 - EP); **C04B 35/49** (2013.01 - US); **C04B 35/491** (2013.01 - EP); **C04B 35/495** (2013.01 - EP); **C04B 35/6261** (2013.01 - US); **C04B 35/62655** (2013.01 - EP); **C04B 35/62695** (2013.01 - US); **C04B 35/63416** (2013.01 - EP US); **C04B 35/64** (2013.01 - US); **H04R 17/02** (2013.01 - US); **H10N 30/50** (2023.02 - US); **H10N 30/853** (2023.02 - CN); **H10N 30/8536** (2023.02 - CN EP US); **H10N 30/871** (2023.02 - US); **H10N 30/872** (2023.02 - US); **C04B 2235/3201** (2013.01 - EP); **C04B 2235/3203** (2013.01 - EP); **C04B 2235/3215** (2013.01 - EP); **C04B 2235/3236** (2013.01 - US); **C04B 2235/3244** (2013.01 - EP); **C04B 2235/3262** (2013.01 - EP); **C04B 2235/3298** (2013.01 - EP); **C04B 2235/604** (2013.01 - US); **C04B 2235/6567** (2013.01 - EP US); **C04B 2235/76** (2013.01 - EP); **C04B 2235/762** (2013.01 - EP US); **C04B 2235/768** (2013.01 - EP US); **C04B 2235/77** (2013.01 - EP US); **C04B 2235/786** (2013.01 - EP US); **C04B 2235/79** (2013.01 - EP); **C04B 2235/87** (2013.01 - US); **C04B 2235/96** (2013.01 - EP); **H10N 30/50** (2023.02 - EP)

Citation (applicant)

- JP S5344456 B2 19781129
- APPLIED PHYSICS LETTERS, vol. 104, 2014, pages 252906

Citation (search report)

- [A] US 2014131611 A1 20140515 - HAYASHI JUMPEI [JP], et al
- [A] US 2017101345 A1 20170413 - SHIMADA MIKIO [JP], et al

Designated contracting state (EPC)

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)

BA ME

DOCDB simple family (publication)

EP 3584848 A1 20191225; **EP 3584848 B1 20211020**; CN 110581211 A 20191217; CN 110581211 B 20240315; JP 2019216238 A 20191219; JP 7348751 B2 20230921; US 11647677 B2 20230509; US 2019378970 A1 20191212

DOCDB simple family (application)

EP 19178038 A 20190604; CN 201910488552 A 20190606; JP 2019102084 A 20190531; US 201916425139 A 20190529